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Title: EMBOSSING PROCESSES FOR SUBSTRATE IMPRINTING, STRUCTURES MADE THEREBY, AND POLYMERS USED

THEREFOR

Assignee: Intel Corporation

IN THE CLAIMS

Please amend the claims as follows:

1. (Original) A process comprising:

forming an imprinted polymer disposed upon a substrate under conditions to expose a bond pad on the substrate by local flow of the polymer, wherein a recess is formed in the polymer;

mating a solder bump with the bond pad; and curing the polymer.

- (Original) The process of claim 1, further including reflowing the solder 2. bump at a process time selected from before curing the polymer, after curing the polymer, and simultaneously with curing the polymer.
- (Original) The process of claim 1, following forming an imprinted polymer 3. the process further including filling a solder flux into the recess.
- 4. (Original) The process of claim 1, following forming an imprinted polymer the process further including filling a solder flux into the recess by a process including pushing the solder flux.
- (Original) The process of claim 1, wherein forming an imprinted polymer 5. includes forming the imprinted polymer with a convex over-all profile.
- 6. (Original) The process of claim 1, wherein forming an imprinted polymer includes forming the imprinted polymer with a convex over-all profile, and the process further including:

mating a microprocessor with the solder bump.

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7. (Original) The process of claim 1, wherein forming an imprinted polymer includes forming the imprinted polymer with a convex over-all profile, and the process further including:

mating a microprocessor with the solder bump, wherein mating includes at least partially flattening the convex over-all profile.

- 8. (Original) The process of claim 1, wherein forming an imprinted polymer includes forming a contoured recess.
- 9. (Original) The process of claim 1, wherein forming an imprinted polymer includes forming a contoured recess, and wherein mating the solder bump with the bond pad includes mating a complementary-contoured solder bump in the recess.
- 10. (Original) The process of claim 1, further including mating a microprocessor with the solder bump.
- 11. (Original) The process of claim 1, wherein the polymer is formed upon the substrate by depositing a prepolymer selected from a resin, an epoxy, and combinations thereof.
- 12. (Original) The process of claim 1, wherein curing the polymer forms a cured polymer film that includes a film-to-substrate thickness ratio in a range from about one-tenth to about one-half the thickness of the substrate.
- 13. (Original) The process of claim 1, wherein the polymer is formed upon the substrate by depositing a prepolymer selected from a resin, an epoxy, and combinations thereof, and wherein curing the polymer forms a cured polymer film including a film-to-substrate thickness ratio selected from about one-tenth, one-eighth, one-fifth, one-fourth, one-third, and one-half the thickness of the substrate.

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14. (Original) The process of claim 1, wherein the polymer is a resin that includes a filler selected from silica, ceria, thoria, zirconia and combinations thereof.

- 15. (Original) The process of claim 1, wherein the polymer is a resin that includes a filler selected from silica, ceria, thoria, zirconia and combinations thereof, and wherein the filler is selected from a spherical particle, an aspherical particle, a fiber, and combinations thereof.
- 16. (Original) The process of claim 1, wherein the polymer is a resin that includes a filler in a concentration range from about 30% to about 90%.
- 17. (Original) A process comprising:

placing a polymer film over a substrate;

imprinting the polymer film under conditions to expose a bond pad on the substrate by local flow of the polymer film, wherein a recess is formed in the polymer film;

mating a solder bump with the bond pad; and curing the polymer film.

- 18. (Original) The process of claim 17, further including reflowing the solder bump at a process time selected from before curing the polymer film, after curing the polymer film, and simultaneously with curing the polymer film.
- 19. (Original) The process of claim 17, following forming an imprinted polymer film the process further including filling a solder flux into the recess.

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20. (Original) The process of claim 17, following forming an imprinted polymer

film the process further including filling a solder flux into the recess by a process

including pushing the solder flux.

21. (Original) The process of claim 17, wherein forming an imprinted polymer

film includes forming a contoured recess.

22. (Original) The process of claim 17, wherein forming an imprinted polymer

includes forming a contoured recess, and wherein mating the solder bump with the

bond pad includes mating a complementary-contoured solder bump in the recess.

23. (Original) The process of claim 17, further including mating a

microprocessor with the solder bump.

24. (Original) The process of claim 17, wherein placing the polymer film upon

the substrate includes placing a polymer film selected from a resin, an epoxy, and

combinations thereof.

25. (Original) The process of claim 17, wherein curing the polymer film forms a

cured polymer film that includes a film-to-substrate thickness ratio in a range from

about one-tenth to about one-half the thickness of the substrate.

26. (Original) The process of claim 17, wherein placing the polymer film upon

the substrate includes placing a polymer film selected from a resin, an epoxy, and

combinations thereof, and wherein curing the polymer film forms a cured polymer

film including a film-to-substrate thickness ratio selected from about one-tenth, one-

eighth, one-fifth, one-fourth, one-third, and one-half the thickness of the substrate.

27- 29 (Canceled)

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30. (New) A process comprising:

forming an imprinted polymer disposed upon a substrate under conditions to expose a bond pad on the substrate by local flow of the polymer, wherein a recess is formed in the polymer;

filling a solder flux into the recess;

mating a solder bump with the bond pad; and

curing the polymer, wherein curing the polymer forms a cured polymer film that includes a film-to-substrate thickness ratio in a range from about one-tenth to about one-half the thickness of the substrate.

31. (New) The process of claim 30, wherein forming an imprinted polymer includes forming the imprinted polymer with a convex over-all profile, and the process further including:

mating a microprocessor with the solder bump.

32. (New) The process of claim 30, wherein forming an imprinted polymer includes forming a contoured recess.